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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,238	01/05/2001	Vincent S. Polkus	GEMS:0106/YOD (15-XZ-5566	3752

7590 05/21/2004

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EXAMINER	
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ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/755,238	Applicant(s) POLKUS ET AL.	
	Examiner Abolfazl Tabatabai	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendments/Arguments

1. Applicant's arguments, (pages 5-15), filed on January 26, 2004 with respect to the rejection(s)of claims 1-36 under Giebeler (U S 5,787,146) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Iyriboz et al (U S 6,369,812 B1); Giebeler (U S 5,787,146) and Deckman et al (U S 4,891,829).

2. Applicant argues in essence that the prior art does not teach or suggest a large cone of emitted X-ray. Examiner disagrees and indicates that Giebeler teaches a large cone of emitted X-ray (column 8, lines 10-17).

3. Applicant argues in essence that the prior art does not teach or suggest an image area different in size. Examiner disagrees and indicates that Giebeler teaches an image area different in size (column 6, lines –10 and column 8, lines 10-17).

4. Applicant argues in essence that the prior art does not teach or suggest identifying a projection of a radiation beam in an image plane. Examiner disagrees and indicates that Giebeler teaches identifying a projection of a radiation beam in an image plane (column 8, lines 19-28).

5. Applicant argues in essence that the prior art does not teach or suggest the projection being asymmetrical. Examiner disagrees and indicates that Giebeler teaches the projection being asymmetrical (column 2, lines 51-59).

6. Applicant argues in essence that the prior art does not teach or suggest image plane or asymmetrical imaging. Examiner disagrees and indicates that Giebeler teaches image plane or asymmetrical imaging (column 3, lines 16-19).

7. Applicant argues in essence that the prior art does not teach or suggest processing image data for a portion of a digital detector based upon the identified projection. Examiner disagrees and indicates that Giebeler teaches processing image data for a portion of a digital detector based upon the identified projection (column 4, lines 15-19).

8. Applicant argues in essence that the prior art does not teach or suggest asymmetric imaging or the identification of a projection. Examiner disagrees and indicates that Giebeler teaches asymmetric imaging or the identification of a projection processing (column 2, lines 51-59).

9. Applicant argues in essence that the prior art does not teach or suggest orienting a radiation beam. Examiner disagrees and indicates that Giebeler teaches orienting a radiation beam (column 15, lines 64-67 and column 16, lines 1-3).

10. Applicant argues in essence that the prior art does not teach or suggest the radiation impinging. Examiner disagrees and indicates that Giebeler teaches the radiation impinging (column 2, lines 46-57).

11. Applicant argues in essence that the prior art does not teach or suggest digital detector. Examiner disagrees and indicates that Giebeler teaches digital detector (column 4, line 15).

12. Applicant argues in essence that the prior art does not teach or suggest generating an operator alert. Examiner disagrees and indicates that Giebeler teaches operator (column 14, line 44).

13. Applicant argues in essence that the prior art does not teach or suggest computing locations of incidence of the radiation. Examiner disagrees and indicates that Deckman computing locations of incidence of the radiation (column 6, lines 26-50).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 1, 2, 9-13,16-18, 21, 27-30, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over of Iyriboz et al (U S 6,369,812 B1) in view of Giebeler (U S 5,787,146).

Regarding claim 1, Iyriboz discloses a medical diagnostic system to provide for cropping an asymmetrical digital image (column 10, lines 16-28), the method comprising the step of:

identifying a projection of a radiation beam in an image plane column 6, lines 63-66; column 8, lines 49-52 and column 9, lines 14-22), the projection being asymmetrical with respect to an axis of the image plane; and,

processing image data for a portion of a digital detector based upon the identified projection (column 3, lines 55-61 and column 6, lines 6-13).

However, Iyriboz is silent about the specific details regarding the step of the projection being asymmetrical with respect to an axis of the image plane.

In the same field (medical diagnostic system) of endeavor, however, Giebeler discloses an x-ray imaging system comprising the step of the projection being asymmetrical with respect to an axis of the image plane (column 8, lines 19-28).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the projection being asymmetrical with respect to an axis of the image plane as taught by Gieberler in the system of Iyriboz because Gieberler provides Iyriboz a system using diffractive x-ray optics allows low cost, high definition, ideal for mammography and enable construction of virtually required diffracting surface, a technique of segmenting and bending diffracting crystals is disclosed. Additional benefit with a CCD digital detector is the ability with boundary intensity detectors to extended the linear dynamic range of detection, to minimize patient exposure, and obtain good imaging of all parts of breast, including skin line.

Regarding claim 2, Iyriboz discloses a medical diagnostic system wherein the step of identifying the projection includes sensing orientation of a radiation source and computing locations of incidence of the radiation beam in the image plane (column 8, lines 24-43).

Regarding claim 9, Iyriboz discloses a medical diagnostic system comprising the step of generating an operator alert if the projection is not encompassed within bounds of the detector (column 5, lines 39-43).

Regarding claim 10, Iyriboz discloses a medical diagnostic system wherein the radiation beam may be angularly oriented and rotationally shaped with respect to the

image plane, and wherein the projection is identified based upon angular orientation and rotational shaping with respect to an orthogonal orientation (column 8, lines 24-43).

Regarding claim 11, Iyriboz discloses a medical diagnostic method for cropping data in a digital x-ray imaging system, the method comprising the steps of:

computing an image area over which the beam impinges the plane (column 5, lines 50-64); and,

processing image data from the region of the detector including the image area (column 5, lines 55-61 and column 6, lines 6-13).

However, Iyriboz is silent about the specific details regarding the step of orienting a radiation beam to project the beam towards an image plane to impinge the plane asymmetrically with respect to an axis of the plane and to impinge a region of a detector extending in the image plane, the region being smaller than an imaging surface of the detector.

In the same field (medical diagnostic system) of endeavor, however, Giebeler discloses an x-ray imaging system comprising the step of orienting a radiation beam to project the beam towards an image plane to impinge the plane asymmetrically with respect to an axis of the plane and to impinge a region of a detector extending in the image plane, the region being smaller than an imaging surface of the detector (column 8, lines 19-28; column 2, lines 46-59 and column 3, lines 3-6).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use orienting a radiation beam to project the beam towards an image plane to impinge the plane asymmetrically as taught by Gieberler in the system

of Iyriboz because Gieberler provides Iyriboz a system using diffractive x-ray optics allows low cost, high definition, ideal for mammography and enable construction of virtually required diffracting surface, a technique of segmenting and bending diffracting crystals is disclosed. Additional benefit with a CCD digital detector is the ability with boundary intensity detectors to extended the linear dynamic range of detection, to minimize patient exposure, and obtain good imaging of all parts of breast, including skin line.

Regarding claim 12, Iyriboz discloses a medical diagnostic method wherein the radiation beam is oriented by angular positioning of a radiation source (column 8, lines 24-43).

Regarding claim 13, Iyriboz discloses a medical diagnostic method wherein the radiation beam is oriented by rotational positioning of a radiation source (column 5, lines 57-64).

Regarding claim 16, Iyriboz discloses a medical diagnostic method wherein the image area is computed by determining projections of portions of the beam upon orientation of the beam (column 5, lines 53-61).

Regarding claim 17, Iyriboz is silent about the specific details regarding the step of determining whether the image area is encompassed by the imaging surface of the detector.

In the same field (medical diagnostic system) of endeavor, however, Giebeler discloses an x-ray imaging system comprising the step of determining whether the image area is encompassed by the imaging surface of the detector (column 16, lines 29-31).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use image area is encompassed as taught by Gieberler in the system of Iyriboz because Gieberler provides Iyriboz a system using diffractive x-ray optics allows low cost, high definition, ideal for mammography and enable construction of virtually required diffracting surface, a technique of segmenting and bending diffracting crystals is disclosed. Additional benefit with a CCD digital detector is the ability with boundary intensity detectors to extended the linear dynamic range of detection, to minimize patient exposure, and obtain good imaging of all parts of breast, including skin line.

Regarding claim 18, Iyriboz discloses a medical diagnostic method comprising the step of generating an operator alert if the image area is not encompassed by the imaging surface of the detector (column 5, lines 39-43).

Regarding claim 21, Iyriboz discloses a medical diagnostic method for processing image data in a digital x-ray imaging system, the method comprising the steps of:

sensing orientation of the radiation beam producing assembly (column 8, lines 24-43);

computing an image area over which the beam impinges the plane (column 5, lines 50-64);

generating the x-ray beam (column 5, lines 57-59); and,

processing image data from the region of the detector including the image area (column 5, lines 55-61 and column 6, lines 6-13).

In the same field (medical diagnostic system) of endeavor, however, Giebeler discloses an x-ray imaging system comprising the step of orienting a radiation beam to project the beam towards an image plane to impinge the plane asymmetrically with respect to an axis of the plane and to impinge a region of a detector extending in the image plane, the region being smaller than an imaging surface of the detector (column 8, lines 19-28; column 2, lines 46-59 and column 3, lines 3-6).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use orienting a radiation beam to project the beam towards an image plane to impinge the plane asymmetrically as taught by Gieberler in the system of Iyriboz because Gieberler provides Iyriboz a system using diffractive x-ray optics allows low cost, high definition, ideal for mammography and enable construction of virtually required diffracting surface, a technique of segmenting and bending diffracting crystals is disclosed. Additional benefit with a CCD digital detector is the ability with boundary intensity detectors to extended the linear dynamic range of detection, to minimize patient exposure, and obtain good imaging of all parts of breast, including skin line.

Claim 27, is similarly analyzed as claim 17 above.

Claim 28, is similarly analyzed as claim 18 above.

Claim 29, is similarly analyzed as claim 18 above.

Claim 30, is similarly analyzed as claim 21 above.

Claim 34, is similarly analyzed as claim 17 above.

Claim 35, is similarly analyzed as claim 18 above.

16. Claims 3-8, 14, 15, 19, 20, 22-26, 31-33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iyriboz et al (U S 6,369,812 B1) and Giebeler (U S 5,787,146) as applied to claims 1, 11, 21 and 30 in view of Deckman et al (U S 4,891,829).

Regarding claim 3, Iyriboz and Giebeler are silent about specific details regarding the step of identifying the projection includes sensing orientation of a collimator and computing locations of incidence of the radiation beam in the image plane.
In the same field of endeavor, however, Deckman discloses a system for utilizing an electro-optic detector in microtomography comprising the step of identifying the projection includes sensing orientation of a collimator and computing locations of incidence of the radiation beam in the image plane (column 14, lines 1-35).
It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use sensing orientation of a collimator and computing locations of incidence of the radiation beam in the image plane as taught by Deckman in the system of Iyriboz because Deckman provides Iyriboz a method for using an imaging electro-optic detector in acquiring tomographic data.

Regarding claim 4, Deckman discloses the method wherein the projection is identified based upon spatial location of a collimator aperture and on a transformation matrix for a radiation source (column 15, lines 55-65 and column 16, lines 45-49).

Claim 5, is similarly analyzed as claim 4 above.

Regarding claim 6, Deckman discloses the method wherein processing the image data includes sampling image data from the detector only from an area encompassing the projection (column 5, lines 60-65 and column 6, lines 3-25).

Regarding claim 7, Deckman discloses the method wherein processing the image data includes storing only image data from an area encompassing the projection (column 23, lines 8-10).

Regarding claim 8, Deckman discloses the method comprising the further step of determining whether the projection is encompassed within bounds of the detector (column 5, lines 60-65).

Regarding claim 14, Deckman discloses the method wherein the radiation beam is oriented by angular positioning of a collimator (column 14, lines 1-55).

Regarding claim 15, Deckman discloses the method wherein the radiation beam is oriented by rotational positioning of a collimator (column 14, lines 1-55).

Regarding claim 19, Deckman discloses the method wherein only image data for the region is sampled form the detector (column 6, lines 3-25).

Regarding claim 20, Deckman discloses the method wherein the region includes portion of an image matrix of rows and columns of pixels, the portion of the image matrix fully encompassing the image area (column 5, lines 1-7 and 60-65).

Regarding claim 22, Deckman discloses the method wherein the radiation beam producing

assembly includes a radiation source and a collimator (column 14, lines 1-55).

Regarding claim 23, Deckman discloses the method wherein the radiation source and the collimator are configured to allow freedom of orientation with respect to one another(column 6, lines 3-11).

Regarding claim 24, Deckman discloses the method wherein the orientations of the radiation source and the collimator are separately sensed in accordance with respective coordinate systems (column 15, lines 16-54).

Regarding claim 25, Deckman discloses the method wherein the image area is computed based upon transformation matrices for the coordinate systems (column 15, lines 55-65 and column 16, lines 45-49).

Regarding claim 26, Deckman discloses the method wherein the image area is computed based upon projection of the beam through an aperture in a collimator(column 16, lines 42-49).

Regarding claim 31, Deckman discloses the system wherein the radiation source assembly includes an x-ray source and a collimator (column 14, lines 1-10).

Regarding claim 32, Deckman discloses the system wherein the radiation source and the collimator are orientable with respect to one another (column 14, lines 1-55).

Claim 33, is similarly analyzed as claim 26 above.

Regarding claim 36, Deckman discloses the system wherein the control circuit is further configured to inhibit initiation of an x-ray exposure if the image area is not encompasses by the imaging surface (column 20, lines 7-17).

Other prior art Cited

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frohlich et al (U S 6,516,046 B1) disclose exact patient positioning by comparing reconstructed x-ray images and linac x-ray images.

Ashburn (U S 5,742,060) discloses medical system for obtaining multiple images of body from different perspective.

Annis (U S 4,809,312) discloses method and apparatus for producing tomographoic images.

Contact Information

18. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.
The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246. The fax phone number for organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

May 14, 2004

TIMOTHY M. JOHNSON
PRIMARY EXAMINER